



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/655,197	09/05/2000	Alfred I-Tsung Pan	10992304-1	7747

22879 7590 11/20/2002

HEWLETT PACKARD COMPANY
P O BOX 272400, 3404 E. HARMONY ROAD
INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER

SOWARD, IDA M

ART UNIT PAPER NUMBER

2822

DATE MAILED: 11/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/655,197

Applicant(s)

PAN, ALFRED I-TSUNG

Examiner

Ida M Soward

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 September 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 14-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- ☐ Interview Summary (PTO-413) Paper No(s) _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other:

DETAILED ACTION

This Office Action is in response to Applicant's amendment filed September 3, 2002.

Claim Rejections - 35 USC § 112

The rejection the claim 11 has been withdrawn due to the amendment filed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4-9 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ho (4,254,445) in view of Houston (US 6,362,117 B1) and Ferri (4,326,180).

Ho teaches a common carrier, comprising: a carrier substrate **9** having an upper surface wherein the carrier substrate includes a plurality of slots **11** for adhering the plurality of chips, one chip per slot; a plurality of integrated chips **10** disposed on the upper surface and aligned with each other and the carrier substrate (Figure 1, col. 2, lines 57-68) and a glass substrate (cols. 1-2, lines 65-68 & 1-3, respectively). Ho further teach the carrier substrate and the integrated chips each having parallel top

Art Unit: 2822

surfaces which reside essentially within the same plane (Figure 1) and the carrier substrate and the integrated chips each having parallel top surfaces which do not reside within the same plane (Figure 3). However, Ho fails to teach lithographic alignment tolerances and an unprocessed integrateable chip on a carrier substrate. Houston teaches lithographic alignment tolerances (col. 1, lines 49-58). Ferri teaches an unprocessed integrateable chip **20** on a carrier substrate **14** (Figure 1, col. 6, lines 26-32). Ferri further teaches at least two electrically conductive nodes **10**, **22** & **26**, the electrically conductive nodes are disposed on either one of the chip and the carrier substrate; and an interconnect **12** & **24** adapted to electrically connect the electrically conductive nodes. In regard to claims 1, 7 and 9, initially, and with respect to claims, note that a "product by process" claim is directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); In re Fitzgerald, 205 USPQ 594, 596 (CCPA); In re Marosi et al., 218 USPQ 289 (CAFC); and most recently, In re Thorpe et al., 227 USPQ 964 (CAFC, 1985) all of which make it clear that it is the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that Applicant has burden of proof in such cases as the above case law makes clear. As to the grounds of rejection under section 103, see MPEP § 2113. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was

Art Unit: 2822

made to modify the structure of Ho with lithographic alignment tolerance of Houston and the unprocessed integrateable circuit chip of Ferri to increase frequency.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ho (4,254,445), Houston (US 6,362,117 B1) and Ferri (4,326,180) as applied to claim 1 above, and further in view of Yao (6,163,068).

Ho, Houston and Ferri teach all mentioned in the rejection above. However, Ho, Houston and Ferri teach integrated circuit chips adhered to a carrier substrate using an adhesive. Yao teaches integrated circuit chips **30** adhered to a carrier substrate **20** using an adhesive **50** (Figure 1, col. 2, lines 26-54). In regards to the function of the adhesive, claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function, In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA). "Apparatus claims cover what a device is, not what a device does." Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the structure of Ho, lithographic alignment tolerance of Houston and the unprocessed integrateable circuit chip of Ferri with the adhesive of Yao to increase the chip capacity.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ho (4,254,445), Houston (US 6,362,117 B1) and Ferri (4,326,180) as applied to claim 1 above, and further in view of Akram (US 2001/0014488 A1).

Art Unit: 2822

Ho, Houston and Ferri teach all mentioned in the rejection above. However, Ho, Houston and Ferri to teach a carrier substrate, an adhesive, and an integrated circuit chip having essentially the same coefficient of thermal expansion (CTE). Akram teaches a carrier substrate **102**, an adhesive **112**, and an integrated circuit chip **104** having essentially the same coefficient of thermal expansion (CTE) (Figure 4, page 2, paragraph [0027]). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the structure of Ho, lithographic alignment tolerance of Houston and the unprocessed integrateable circuit chip of Ferri with the CTE of Akram to increase the semiconductor die density of a semiconductor package.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ho (4,254,445), Houston (US 6,362,117 B1) and Ferri (4,326,180) as applied to claims 1 and 5-7 above, and further in view of Bayan et al. (6,372,539 B1).

Ho, Houston and Ferri teach all mentioned in the rejection above. However, Ho, Houston and Ferri fail to teach a filler to fill the gaps. Bayan et al. teach a filler material **225** adapted to fill a peripheral gap between the interior edges of each of the slots **208** and the peripheral edges of each of the integrated chips **220** when each chip is adhered within each slot (Figure 3G, col. 5, lines 29-67). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the structure of Ho, lithographic alignment tolerance of Houston and the unprocessed

Art Unit: 2822

integrateable circuit chip of Ferri with the filler material of Bayan et al. to improve production efficiency.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ho (4,254,445), Houston (US 6,362,117 B1) and Ferri (4,326,180) as applied to claims 1, 5-7 and 10 above, and further in view of Moser et al. (4,797,780).

Ho, Houston and Ferri teach all mentioned in the rejection above. However, Ho, Houston and Ferri fail to teach a filler material comprising glass frit. Moser et al. teach a filler material comprising glass frit (col. 1, lines 57-63). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the structure of Ho, lithographic alignment tolerance of Houston and the unprocessed integrateable circuit chip of Ferri with the glass frit filler material of Moser et al. to provide impregnable filler.

Response to Arguments

Applicant's arguments with respect to claims 1-13 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

Art Unit: 2822

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ida M Soward whose telephone number is 703-305-3308. The examiner can normally be reached on Monday - Thursday, 6:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 703-308-4905. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Application/Control Number: 09/655,197

Page 8

Art Unit: 2822

ims

November 17, 2002



**AMIR ZARABIAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800**